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REMARKS

This amendment is responsive to the Office Action dated October 1, 2007 for which a three (3) month period of response was given. A Petition and fee for a two (2) month extension of time accompany this paper. Since March 1, 2008 was a Saturday and March 2, 2008 a Sunday, this paper and any accompanying papers are timely filed on Monday, March 3, 2008. However, should an additional extension of time and/or additional claim fees be due, the Commissioner is hereby authorized to treat this paper as a Petition for any needed extension of time and to charge any fees due to Deposit Account No. 50-0959, Attorney Docket No. 089498.0436.

Claims 1 and 3 through 19 are pending in the present application. Claim 2 has been cancelled. Claims 1, 5 and 11 through 14 have been amended. Support for the amendments to claims 1, 5 and 11 through 14 can be found in the specification as filed. Claims 18 and 19 have been added. Support for newly added claims 18 and 19 can be found in the specification as filed. Accordingly, no new matter has been added. As such, entry and consideration of the amendments to the claims is believed due and is respectfully requested.

I. Priority Claim:

As noted above, the specification has been amended to include a "related application data" section. Given the amendment to the specification, and the acknowledgement of the priority claim on the filing receipt for this patent application, the claim for priority is now perfected.

II. The 35 U.S.C. § 102 Rejections

Claims 1, 4, 6 through 13 and 15 have been rejected under 35 U.S.C. §102(b) over Cremonesi (United States Patent No. 4,338,401). As is noted by the Examiner, Cremonesi discloses a method of incorporating proteins into polymeric fibers. Specifically, Cremonesi discloses incorporating horseradish peroxide into cellulose fibers by mixing the cellulose with horseradish peroxidase and a vinyl functional group capable of modifying the peroxidase in an aqueous solution. The derivitized peroxidase/fiber is

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polymerized by irradiating the solution with ultraviolet light with the vinyl group modifying the peroxidase allowing it to attach to the cellulose fiber. A solid fiber with peroxide activity is obtained.

On the other hand, the present invention relates to a fibrous protein-immobilization system composition. This composition is comprised of a nanofiber made from a fiber-forming material and a protein attached to the fiber-forming material. Such nanofibers are typically formed via electro-spinning and possess diameters less than 1 micron. Each nanofiber requires not only materials suitable for electro-spinning, but also contains functional groups suitable to permit the chemical attachment of one or more proteins. The protein attachment is performed via formation of chemical covalent bonds between the protein and functional groups exposed to the surface of the fibers. In some embodiments, the functional groups are an integral part of the polymer that forms the fiber, with its roots inside the fiber and its reactive portion pointed outside the fiber, achieving permanent attachment. Such an arrangement allows for higher loading of proteins on a small diameter fiber. In order to better differentiate from Cremonesi, claims 1 and 11 have been amended to define the fiber as being a nanofiber.

Given the subject matter of pending claims 1, 4, 6 through 13 and 15, and the claim amendments made to claims 1 and 11, Cremonesi fails to disclose each and every feature of claims 1, 4, 6 through 13 and 15. Specifically, Cremonesi fails to disclose a fibrous protein-immobilization system composition comprised of a nanofiber made from fiber-forming material and a protein attached to such a nanofiber.

In light of the above, Cremonesi fails to disclose each and every element of claims 1, 4, 6 through 13 and 15. Thus, Cremonesi cannot anticipate claims 1, 4, 6 through 13 and 15. As such, the novelty rejection of claims 1, 4, 6 through 13 and 15 over Cremonesi is unfounded, and withdrawal thereof is respectfully requested.

Claims 1; 3 through 11, 13, 16 and 17 have been rejected under 35 U.S.C. §102(b) over Matsumoto et al. (United States Patent No. 4,371,612). As is noted by the Examiner, Matsumoto et al. discloses a method of attaching proteins directly to a polymeric fiber. Specifically, Matsumoto et al. discloses the protein directly absorbing onto the surface or being covalently bonded through an intermediate linking group. The protein to be

immobilized can be an antibody, a hormone, or an enzyme. In one embodiment Matsumoto et al. discloses using Phospholipase D to attach to fibers.

On the other hand, the present invention relates to a fibrous protein-immobilization system composition. This composition is comprised of a nanofiber made from fiber-forming material and a protein attached to such a nanofiber. Such nanofibers typically possess diameters less than 1 micrometer. Each nanofiber contains functional groups suitable to permit the attachment of proteins. The protein attachment is performed via formation of chemical covalent bonds between the protein and functional groups exposed to the surface of the fibers. The functional groups are thus an integral part of the polymer that forms the fiber, with its roots inside the fiber and its reactive portion pointed outside the fiber, achieving permanent attachment. The functional group itself is contained within a portion of the fiber-forming material. In order to better differentiate from Matsumoto et al., claims 1 and 11 have been amended to define the fiber as being a nanofiber and to define the functional group as being contained within the fiber-forming material.

Given the subject matter of pending claims 1, 3 through 11, 13, 16 and 17, and the claim amendments made to claims 1 and 11, Matsumoto et al. fails to disclose each and every feature of claims 1, 3 through 11, 13, 16 and 17. Specifically, Matsumoto et al. fails to disclose a fibrous protein-immobilization system composition comprised of a nanofiber made from fiber-forming material and a protein attached to the fiber-forming material.

In light of the above, Matsumoto et al. fails to disclose each and every element of claims 1, 3 through 11, 13, 16 and 17. Thus, Matsumoto et al. cannot anticipate claims 1, 3 through 11, 13, 16 and 17. As such, the novelty rejection of claims 1, 3 through 11, 13, 16 and 17 over Matsumoto et al. is unfounded, and withdrawal thereof is respectfully requested.

Claims 1 through 3, 5, 8, 9, 11 and 13 have been rejected under 35 U.S.C. §102(b) over Tennent et al. (United States Patent No. 6,099,960). As is noted by the Examiner, Tennent et al. discloses a nanofiber comprising carbon. Specifically, Tennent et al. discloses the nanofiber as being functionalized so that it may immobilize active groups. Such groups may be enzymes, antibodies, or antigens.

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The present invention relates to a fibrous protein-immobilization system composition. This composition is comprised of a nanofiber made from fiber-forming material and a protein attached to such a nanofiber. Such nanofibers typically possess diameters less than 1 micrometer. Each nanofiber contains functional groups suitable to permit the attachment of proteins. The protein attachment is performed via formation of chemical covalent bonds between the protein and functional groups exposed to the surface of the fibers. The functional groups are thus an integral part of the polymer that forms the fiber, with its roots inside the fiber and its reactive portion pointed outside the fiber, achieving permanent attachment. The functional group itself is contained within a portion of the fiber-forming material. In order to better differentiate from Matsumoto et al., claims 1 and 11 have been amended to define the fiber as being a nanofiber and to define the functional group as being contained within the fiber-forming material.

Given the subject matter of pending claims 1 through 3, 5, 8, 9, 11 and 13, and the claim amendments made to claims 1 and 11, Tennent et al. fails to disclose each and every feature of claims 1 through 3, 5, 8, 9, 11 and 13. Specifically, Tennent et al. fails to disclose a fibrous protein-immobilization system composition comprised of a nanofiber made from fiber-forming material and a protein attached to the fiber-forming material.

In light of the above, Tennent et al. fails to disclose each and every element of claims 1 through 3, 5, 8, 9, 11 and 13. Thus, Tennent et al. cannot anticipate claims 1 through 3, 5, 8, 9, 11 and 13. As such, the novelty rejection of claims 1 through 3, 5, 8, 9, 11 and 13 over Tennent et al. is unfounded, and withdrawal thereof is respectfully requested.

Claims 1 through 3, 5, 8, 9, 11, 13 and 14 have been rejected under 35 U.S.C. §102(b) over Greiner et al. (United States Patent No. 6,667,099). As is noted by the Examiner, Greiner et al. discloses a method of electrospinning nanofibers from polyolefins. The fibers are then coated with a second layer. The hollow nanofibers can also contain other proteins and the protein can be attached by appropriate functional groups on the nanofiber.

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The present invention relates to a fibrous protein-immobilization system composition. This composition is comprised of a nanofiber made from fiber forming material and a protein attached to such a nanofiber. Such nanofibers typically possess diameters less than 1 micrometer. Each nanofiber contains functional groups suitable to permit the attachment of proteins. The protein attachment is performed via formation of chemical covalent bonds between the protein and functional groups exposed to the surface of the fibers. The functional groups are thus an integral part of the polymer that forms the fiber, with its roots inside the fiber and its reactive portion pointed outside the fiber, achieving permanent attachment. The functional group itself is contained within a portion of the fiber-forming material. In order to better differentiate from Greiner et al., claims 1 and 11 have been amended to define the fiber as being a nanofiber and to define the functional group as being contained within the fiber-forming material.

Given the subject matter of pending claims 1 through 3, 5, 8, 9, 11, 13 and 14, and the claim amendments made to claims 1 and 11, Greiner et al. fails to disclose each and every feature of claims 1 through 3, 5, 8, 9, 11, 13 and 14. Specifically, Greiner et al. fails to disclose a fibrous protein-immobilization system composition comprised of a nanofiber made from fiber-forming material and a protein attached to the fiber-forming material.

In light of the above, Greiner et al. fails to disclose each and every element of claims 1 through 3, 5, 8, 9, 11, 13 and 14. Thus, Greiner et al. cannot anticipate claims 1 through 3, 5, 8, 9, 11, 13 and 14. As such, the novelty rejection of claims 1 through 3, 5, 8, 9, 11, 13 and 14 over Greiner et al. is unfounded, and withdrawal thereof is respectfully requested.

III. Conclusion:

Accordingly, reconsideration and withdrawal of the pending rejection of claims 1 and 3 through 17 is respectfully requested.

For at least the foregoing reasons, claims 1 and 3 through 19 of the present application are believed to be in condition for allowance, and a Notice of Allowance is respectfully requested.

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Should the Examiner wish to discuss any of the foregoing in more detail, the undersigned attorney would welcome a telephone call.

Respectfully submitted,

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